Question	Answer	Solution
21.	$\angle 2$	$\frac{5}{12} = \frac{7.5}{18} = \tan\angle 2$ $\angle A = \angle 2$
25.	$\angle 2$	$\frac{12}{13} = \frac{18}{19.5} = \cos\angle 2$ $\angle A = \angle 2$
29.	37°	$\cos^{-1}(0.8) \approx 37^\circ$
31.	57°	$\tan^{-1}(1.55) \approx 57^\circ$
34.	$DF \approx 2.65$; $m\angle D \approx 32^\circ$; $m\angle F \approx 58^\circ$	**Step 1** Find unknown side length. $DF = \sqrt{(\sqrt{5})^2 + (\sqrt{2})^2}$ $= \sqrt{5+2} = \sqrt{7} \approx 2.65$ **Step 2** Find unknown $\angle$ measures. $m\angle D = \tan^{-1}\left(\frac{\sqrt{2}}{\sqrt{5}}\right) \approx 32^\circ$ $m\angle F = \tan^{-1}\left(\frac{\sqrt{5}}{\sqrt{2}}\right) \approx 58^\circ$
35.	$QR \approx 4.90$; $m\angle P \approx 36^\circ$; $m\angle R \approx 54^\circ$	**Step 1** Find unknown $\angle$ measures. $m\angle P = \cos^{-1}\left(\frac{6.7}{8.3}\right) \approx 36^\circ$ $m\angle R = \sin^{-1}\left(\frac{6.7}{8.3}\right) \approx 54^\circ$ **Step 2** Find unknown side length. $QR = 8.3\sin P$ $= 8.3\sin\left(\cos^{-1}\left(\frac{6.7}{8.3}\right)\right) \approx 4.90$
36.	$AB = 5$; $BC = 1$; $AC \approx 5.10$; $m\angle B = 90^\circ$; $m\angle A \approx 11^\circ$; $m\angle C \approx 79^\circ$	**Step 1** Find side lengths. $\overline{AB}$ is vert., $AB = 5$; $\overline{BC}$ is horiz., $BC = 1$ By Pyth. Thm., $AC = \sqrt{5^2 + 1^2} = \sqrt{26} \approx 5.10$ **Step 2** Find $\angle$ measures. $m\angle B = 90^\circ$ $m\angle A = \tan^{-1}\left(\frac{BC}{AB}\right) = \sin^{-1}\left(\frac{1}{5}\right) \approx 11^\circ$ $m\angle C \approx 90 - 11 \approx 79^\circ$

Question	Answer	Solution
37.	$MN = NP = 4$; $MP \approx 5.66$; $m\angle N = 90^\circ$; $m\angle M = m\angle P = 45^\circ$	**Step 1** Find side lengths. $\overline{MN}$ is vert., $MN = 4$; $\overline{NP}$ is horiz., $NP = 4$ By Pyth. Thm., $MP = \sqrt{4^2 + 4^2} = \sqrt{32} \approx 5.66$ **Step 2** Find $\angle$ measures. $m\angle N = 90°$ $m\angle M = \tan^{-1}\left(\frac{NP}{MN}\right) = \tan^{-1}\left(\frac{4}{4}\right) = 45°$ $m\angle P = 90 - 45 = 45°$
38.	3° to 4°	Range of $\angle$ measures is between $\tan^{-1}\left(\frac{1}{20}\right) \approx 3°$ and $\tan^{-1}\left(\frac{1}{16}\right) \approx 4°$.
51.	The acute $\angle$ measure changes from about 58° to about 73°, an increase by a factor of 1.26.	$\tan^{-1}\left(\frac{45}{28}\right) \approx 58°$, $\tan^{-1}\left(\frac{90}{28}\right) \approx 73°$ Acute $\angle$ measure changes from about 58° to about 73°, an increase by a factor of 1.26.
54.	16°	$m\angle BDC = \tan^{-1}\left(\frac{2}{7}\right) \approx 16°$
58.	tan 70° > tan 60°; possible answer: consider 2 rt. $\triangle$, 1 with a 60° $\angle$ and 1 with a 70° $\angle$. Suppose that legs adj. to these $\angle$ have length 1 unit. Leg opp. 70° $\angle$ will be longer than leg opp. 60° $\angle$. So tan 70° is greater than tan 60°.	tan 70° > tan 60°; possible answer: consider 2 rt. $\triangle$, 1 with a 60° $\angle$ and 1 with a 70° $\angle$. Suppose that legs adj. to these $\angle$ have length 1 unit. Leg opp. 70° $\angle$ will be longer than leg opp. 60° $\angle$. So tan 70° is greater than tan 60°.
60.	34°	$\tan^{-1}(m) = \tan^{-1}\left(\frac{2}{3}\right) \approx 34°$
62.	Since $\triangle$ is not a rt. $\triangle$., trig. ratios do not apply.	Since $\triangle$ is not a rt. $\triangle$., trig. ratios do not apply.
63.	No; possible answer: it is only necessary to know 2 side lengths. You can use the Pyth. Thm. to find the third side length or use trigonometric ratios to find the acute $\angle$ measures.	No; possible answer: you only need to know 2 side lengths. You can use Pyth. Thm. to find 3rd side length or use trig. ratios to find acute $\angle$ measures.